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MORAL CREATIVITY IN SCIENCE AND LAW*

by Thomas A. Cowan - Rutgers Law School

We start with a series of mysteries. Whatever induced contemporary culture to put so high a value on creativity? And how did the nineteenth century ever get the still prevalent notion that science (or any other human activity) could be divorced from morality? And what has science to do with law anyway? Finally, the deepest mystery, Is not the notion of moral creativity an intolerable presumption? Can Morality be created at all by us notoriously immoral human beings?

One of these impossible questions could have so intimidated us that, faced with it, we might have been persuaded to give up our formidable venture. But paradoxically the very avalanche of impossibilities so numbs our senses that we plow right ahead, without too much hope of success but with no fear of failure at all.

Let us now backtrack a bit, clinging to the conviction that there is some sense in our venture. We begin with the easiest of our impossible questions: How did the nineteenth century ever get the notion that morality is irrelevant to science? We intend to say, of course, that this notion is wholly unacceptable to us and thus to establish if we can one important link between the various elements of our structure.

We need not try to trace the origin of the notion that science and morality are separate or even incompatible. We could find it fullblown in ancient Greece; just as we find its direct antithesis in the Socratic teaching that science and morality have an identical aim; to know the good is to do it. Vice is ignorance; knowledge is good.

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*The subject of the relationship of the law and the new biology is explored at great length in a symposium entitled, Reflections on the New Biology, with an Introduction by Linus Pauling in 15 UCLA Law Review No. 2, February 1962, pp. vii; 267-550.

We find strong intimations of the separation in the renaissance struggle of science to liberate itself from those supposed guardians of morality, the church and the state; so that the notion of "free-thinker" meant at once a proponent of science and an opponent of church, and if need be, of state as well. But this represents a battle of institutions and of ideas rather than an actual separation of science and morality. Indeed, the free-thinkers of the renaissance and post-renaissance enlightenment were most moral men, highly moral subversives, we might call them. Scientists practiced an austere and even dangerous morality. Temporary defection, as in the case of Galileo, stands out prominently. In the main, the people who laid down the foundations of modern science were saints, dedicated to the service of God. Copernicus, Tycho Brahe, Kepler--these men labored to display what God had made. Newton's biographer says of him that he spent at least as much time on religion as on science. There is no reason to doubt the sincerely religious nature of Descartes, the inventor of analytical geometry and the father of modern mechanics. Pascal, brilliant mathematician, sacrificed a career in science because of his deep love of Christ, and because of the overwhelming conviction that religion, not science, was for him the path to the soul's salvation.

Indeed, we are hard put to it to determine just when science lost its holy character and, deprived of religious and of avowed moral inspiration, felt impelled in its poverty to proclaim itself value-free. The growth of scientific autonomy, like the growth of the idea of autonomy in any other human sector, is accompanied by an impoverishment of the human spirit in other realms.

Exemption from moral responsibility is a persistent motif in human affairs. The notion of amoral science has many analogues and affinities. The gods, of course, are above moral obligation. Whether we think of

Olympian deities, the Old Testament God who was such a trial to that eminently moral man Job, oriental divine despots or Divine Right kings, we meet the notion of beings who are outside moral obligation just because they partake of divinity. In our field we can think of unaccountable Parliaments, the Volksgeist which can do no wrong, the dictatorships, benevolent or malign, for whom the only test of goodness is efficiency in attaining their ends. We can think of a Sovereign People, who can do no wrong because their collective will is the very meaning of right. Indeed, we can even think of a system of jurisprudence, analytical or positivistic, whose sole avowed concern is with the nature of law as a non-moral system of prescriptions. Artists throughout the ages are granted a certain exemption from the demands of ordinary morality. So are their more unfortunate brethren, the insane. Time was when women shared in this dubious privilege. Until recently, children, like gods, were amoral.

How now did it come about that scientists as scientists began to claim moral non-responsibility? If our historical analogues have anything to teach us, it is that moral non-responsibility goes along with both the blessing and the curse of the gods. In persons otherwise sui juris, that is, where the immunity is not really a disability or a denial of full humanity, moral non-responsibility is a sign of an inflation of the spirit. Its appearance is often a portent that the divinities of the netherworld are preparing an engine for the destruction of human complacence.

Whatever may have been the deep underlying forces which compelled science in the nineteenth century to proclaim autonomy, the fact is that this claim was put forward at a time when the pretension was beginning to be transparent. The model of scientific investigation then had gone all the way back to ancient Greece for a prototype, specifically to the atomistic world model of Democritus. Nature once more became a total

machine. The immediate precursors of this model were many (even human society had been likened to a machine in the age of social mechanics). But in Laplace's famous formulation the analogue of the machine became complete. "Tell me," he said in effect, "the position and velocity of every particle in the universe at the present moment, and I shall reconstruct the past and predict the future." Not only did he say that he had no need for the hypothesis of a god in this model; morality had no place in it either.

We know the immense influence that this intransigent amorality had on the science of the day. It aided mightily in the struggle which biology was currently undertaking to emancipate itself from the stifling influence of the Hebraic-Christian model of a universe that had come into being once and for all a few thousand years ago and would pass into non-being a short while hence. It is hard now to imagine which extreme, whether the religious world picture or the scientific one, gave us a more archaic view of the nature of our world, that is, as a time-bound fixed hierarchic realm of being destined soon to pass away, or as a machine whose total program was already written. Thus, there was no place for science in the churchly model, and no place for religion or morality in the scientific model.

Neither model was destined to last long. We need say nothing of the churchly model. The churches themselves have repudiated it. The archaic scientific one is of greater concern to us.

We know that science itself destroyed its model of the universe as a classic Cartesian machine. The revolutionary nature of modern physics introduced sufficient relativities, discontinuities, indeterminacies and statistical summations to throw the Laplacian model into the discard in little more than half a century. Not only was the element of mystery

returned to the universe, but the Kantian insight that at the heart of every scientific act stands the human observer and his purposes began slowly to win its way. Men perceived that science has a purpose; that all its actions are means to ends; that human ends are values; and finally that values are another name for morality. It becomes apparent that science is human action, and the suspicion deepens that a scientist's actions, like those of all other human beings, are the stuff of morality. The notion of moral non-responsibility in the conduct of science was seen first as a dangerous conceit and more recently as a premonition of catastrophe. We may say in conclusion that science has become alerted to the fact that its claim to moral non-responsibility is not only untenable. It is being perceived as immoral.

Let us suppose that we have established to our own satisfaction an important link in our chain. We have attached morality once more to the structure of science. We are now faced with the question of moral creativity in science.

I shall not pause long on the matter of the relation to science of creativity in general. All scientists admit, some rather ruefully, that creativity is for them a most urgent concern. None deny that to be scientific necessarily implied creativity of some sort. But just what creativity is in science or elsewhere is a matter most scientists are reluctant to say. For it involves the basic nature of science. For instance, is science basically discovery or basically invention? If science is only discovery, as the nineteenth century model of the universe demanded, then creativity has a peculiar passive role in it. Discovery may be creative but its creative element is at the mercy of luck or chance. Mere discovery seems to exclude the idea of the creative entirely.

Contrariwise, the model which places the scientist at the center of the scientific enterprise so that all its observations are his, its law bears his peculiar human mark, its successes and failures are those of the human condition, this model has a vastly enhanced role for the element of the creative.

The scientist is beginning to ask questions about the nature of the creative. If it is no longer primarily an aspect of the external world, perhaps it belongs to the internal order of the human mind, or is the reward for extraordinary diligence, preparation and open-minded awareness. Creativity, we shall say, in making our choice of competing postulates, is an aspect of the inquiring scientific mind.

That much settled, we have more to do. Although we have located our great unknown and placed it squarely within the "creating mind" we have not yet attempted to say what it is. What then is creativity? We have another choice to make. Shall we say that the domain of the creative is merely a name to describe what we are looking for, what we do not yet have, what we need, our unsolved problems, in a word, the unknown? Further, is not the unknown precisely what is beyond our grasp, so that when a sliver of it comes into our possession, the unknown is put just as far away as ever from us? And finally, is not creativity a special gift given only to certain chance selected people on rare occasions? Some few are the darlings of the gods; others must just plod along relying more on sweat than inspiration for their modest contribution to the store of human culture. Indeed even the gods' darlings are only momentarily such. In between the short bursts of inspiration are they not even more prosaic than the rest of us?

This surely is one way of looking at the phenomenon of creativity;

but there is another. That is to consider what will follow if we regard creativity as an ordinary aspect of the human mind; a part of this general human condition, as natural to man as curiosity or love. We humans are plants. We flourish if conditions are right. Instead therefore of regarding creativity as something extraordinary which happens only rarely and quickly goes its way, perhaps creativity is something already with us, to be nourished just as our other native endowments must be. Let science examine this postulate. It may be that the creative spirit, already very much in evidence among us if we would but recognize it, gives us endless opportunity when we provide the right conditions for its enhancement. And the task of "providing the right conditions for the enhancement" of anything is nothing other than a description of the activity which goes by the name of science.

To sum up, we have chosen to link morality with science, rejecting the very idea that the scientific endeavor is morally non-responsible or, what comes to the same thing, that the pursuit of science is ipso facto good. We have singled out one aspect of science without which it would be unworthy of the name, and that is its creative aspect. We have assumed that the role of creativity in science is pervasive, so that everything it does must share this mark including science's concern with morality. We have further chosen to regard creativity as an integral aspect of the human mind and as a natural propensity for whose growth science can and therefore must provide the proper conditions. It follows that we have been able to set the first part of our thesis in place, that is, to give meaning to the notion of Moral Creativity in Science. It remains to give urgency to this notion.

I have chosen a current problem in biology to establish the urgent

relevance of the notion of moral creativity in science. This example will, I hope, show how inevitable it is that law, the partner of morality, must necessarily be drawn in when science undertakes what I shall call a set of crucial moral experiments.

I refer to the subject of the Control of Human Heredity and Evolution, not however in the setting of the long-range and largely unsuccessful attempts of eugenics to improve the human stock, but rather to what has been called "the impending revision of the experimental design of human evolution." Molecular biology has given us the possibility of interfering massively with the process of genetic evolution. It appears inevitable that such power will be used. It is quite clear, as the debates of the biologists inform us, that we are faced here and now with the necessity of determining how the human race should evolve. Fortunately, there is still time to consider the moral implications of this horrendous matter before its full impact hits us.

Strangely enough, the issues still seem to be held within the confines of biological science and medical practice. How long is this state of affairs likely to last? Faint rumblings seem to be detectible on the subject of organ transplantation. What would happen if and when human brain transplantation is suggested? Perhaps the fantastic technical difficulties, the scarcity of suitable donors, the restriction of the transplant to those already virtually dead, may serve to keep the matter a tour de force of the laboratory and operating room, and thus outside direct concern of ordinary people. Perhaps also the general technological revolution has so accustomed us to interchangeable parts that the issue has already been settled in the public mind.

But what shall we say of other more revolutionary alterations in

the human body that are in the offing? Do we want molecular biology to tackle seriously the problem of human senescence; and if so, with what goal in mind? It is hard to imagine a more disturbing matter than a fundamental change in the span of human existence. But we shall try. What about genetic altering of human personality? What about a drastic increase in human brain volume? Experiments to eliminate genetic disease? Finally, what about the creation of new forms of human life? The by-passing of sexual reproduction in favor of vegetative reproduction to get pure strains of "superior" human beings?

I certainly should not feel justified in indulging in such speculations if biologists were themselves not already doing it. There is not a question of whether or not we should allow experimenting with the course of human life to take place. That issue I regard as settled. What confronts us is whether we shall conduct this line of experiment consciously or unconsciously, or as I should say in the context of these lectures, whether we tackle this catastrophic problem creatively or merely allow events to take their course. What greater scope for creativity than the development of what has been called new evolutionary theory for modelling a living system that makes plans to alter its own nature? That the issues are moral ones we feel all biologists should admit, so that for the first time in the modern history of the science, its thoughtful minds are confronted with a moral dilemma and one which cannot safely be shifted on to others. If biologists do not recognize the moral nature of their choices it may well be that those whose business is moral decision together with the immense force of public opinion will force this recognition on them, with a directness and a brutality that such confrontations often take. The dilemma is sharp, for human history

seems to teach us that all general plans for human action are abortive. All schemes for ordering human behavior from those of the loftiest religions to the most prosaic plans for rational communal living end in disaster. They run up against the hard unyielding fact of human diversity, contentiousness, recalcitrance. Empires disintegrate. Religions take on forms that would appal their founders; or else they just die. Laws, like those of the Medes and Persians, seldom outlive their codifiers; the nature of science changes drastically within the memory of its living practitioners.

Human destiny, as all our wisdom teaches us, is in the hands of the gods, or as we should perhaps say today, in the womb of the unconscious. Is it not the part of wisdom then for biologists, and for us moralists and lawyers who have to put such new mysterious doings in the frame of ordinary human decision well advised simply to mind our own business and let the deep tides of human action take their own course? And is this not exactly what is going to happen anyway, judging by the past efforts of the race to confine itself within the bounds of rationality? Why harass the scientist (in this case the biologist), the moralist and the law-maker with such hopeless problems, particularly when it is apparent from our past history that nothing ever turns out in ways that we foresee? Can we not caution each other to take it easy; not rush in where even devils fear to tread? The plan for the production of superior human beings should simply be dismissed, should it not, as the most dangerous instance of overweening pride to afflict the human spirit since the decision of Adam, our primal father, to engage in the science of agriculture rather than to remain a simple food gatherer in the Garden of Eden? Should we who know how to plan for nothing else even consider planning ourselves?

If our political constitutions change drastically as soon as adopted, or come to grief even before that, what luck are we likely to have with re-writing our biological constitution? Indeed, can it even be considered that the question of our biological constitution is a biological problem, except in a peripheral sense? Is it not rather a moral, and hence also a legal question? One for the determination of the race with its moral experience rather than a matter for so specialized a domain as molecular biology to decide?

We must return to the first aspect of our theme - the relation of morality and science. It is often said that biological evolution seems not to have done much to us since the paleolithic. Is it any wonder then that a scant five thousand years ago western culture should have decided against its existence - decided, that is, that man was a perfected animal? Its gods had made it whole and entire at one moment, and as befits such a being, the rest of the universe was made, once and for all, for his use and enjoyment and for the honor and glory of his gods. Evolution arrested for such a tremendously long period is evolution non-existent, is it not? His biological evolution having come to an end, by what decision, whether his own or the environment or the gods we know not, man then began as we say to evolve culturally. Otherwise put, he began to alter his biosphere and came upon the conviction, condemned into religious dogma for its safe preservation, that he himself was unchangeable. Meanwhile he set about to change the entire surface of the earth, largely through the planning sciences of agriculture, navigation, and war. It almost seems as though all these hectic activities had for a central purpose the object of directing attention away from man himself.

Now, if one wanted to press the matter sufficiently it could be

found that the doctrine that man has changed biologically only in insignificant ways since the paleolithic is itself based on a set of assumptions as to what changes are significant. Looked at from the viewpoint of different assumptions, it appears that of course man has changed biologically in changing over from hunter to farmer. Navigation alters the species in ways different from the effects of migration. Medicine is modifying the human gene pool massively especially in the matter of lowering infant mortality. And the thousand and one cultural preferences for sex, color, occupation, life itself are and have been cumulatively decisive in the biological evolution of our species. Our morality has brought about these changes. If we take morality to be the sum of the ways human beings ought to behave, or otherwise put, the courses of conduct appropriate to the human species, then it is easy to see what effect morality has on biological constitution. Contrary to what we tell children, the good do not die young. They are selected out to live; they propagate, and thus they pass on their genetic endowment to their descendants. Lest we forget, our most recent holocaust, World War II, was fought out in support of and against a theory of moral-biological differences. And our own moral experiment in the legally enforced integration of races involves the same issue.

This view of human evolution as affected by decision on who should live and who should die, who should get food and who should starve, who should marry whom, who should work and who should play, in a word, our morality, is of course contrary to the other two principles of human evolution, the first of which proclaimed that human evolution never existed, and the second that the evolution of all life is non-moral.

It is perhaps a little difficult for us to realize how the doctrine

of natural selection could have had such a dramatically liberating influence on biology (and indeed on all sciences) in the nineteenth century. That root metaphor pictured living things presenting random variations to inanimate non-moral physical nature which selected out those whose offspring should live and those which are not to be born. Philosophy has analogues of this story of blind inexorable nature disposing mechanically of human life. Religion too has many, and mythology still more. It was not the crudity of the model that constituted its strength. It was the powerful opposition it presented to a static theory of the course of life on earth, heavily entrenched in Western religion and apparently one of its most important stocks in trade. Still, opposition to religion would not have been enough. Once the mask of static biological condition, exemplified presumably in man's slow rate of change throughout perceptible history, had been stripped off, then the way opened to make the massive re-adjustment that created the modern biological and related sciences. That job of unmasking has been done. The severance of biology from morality (I do not speak of religion) seemed complete. What one now suspects is that the non-moral biologist, having established his right to specialize in the non-moral aspects of his job is now threatened with the dangers of over-specialization - a condition well known to him in the history of the evolution of organisms. Perhaps, I say, the specialist in the non-moral aspects of life is in danger of becoming over-specialized. His determination to place the power of decision over the course of life in inanimate nature, the crudest of all deterministic models, restricts his scientific imagination unduly. Would it not be better to try an alternative model - one which places the power of decision for human evolution as well as for that of an indefinite range of non-human life in the human being, the

environment becoming once more his challenge, his problem, and if he fails, his doom? At any rate, I suggest that molecular biologists are acting in accordance with this model, whatever lip service they may deem it expedient to pay to the older model, now become sacrosanct.

But if man is to become the center of human evolution, and by his conscious choices to determine his own biological form, then in accordance with our definition of morality as the sum of actions deemed fitting for the race, this directed consciously chosen course of biological modification becomes a moral enterprise as well.

Please note that I have not said that a directed course of biological modification ought to be a moral enterprise. I have said that it is, meaning that if a given course is not moral, then it is immoral. I mean to suggest that it cannot be non-moral. Does this mean that for me all scientific activity is moral and conversely every moral action must be scientific? Do I in a word merge the two concepts. No, I do not. I shall confine myself to saying this flatly, being confident that if need be I could distinguish scientific from moral conduct. Then, next, do I mean to say that each of these grand human enterprises entails the other, so that sooner or later an immoral science or an unscientific morality destroys itself? I cannot tell you how alluring the examination of that prospect is for me, but I must put it too aside. I mean something much less and more ordinary: I mean to say that a large scale conscious course of decisions that human beings make is made on a better-worse basis. Even if it could be conceived that a universal decree were issued that all modifications of human genetic control systems must be on a random basis, this decision in itself would be moral (or perhaps immoral). So the matter is as simple as that. Whatever conscious choices we make for

genetic or other evolutionary modifications in the course of human life will be made on a better-worse basis and hence will be moral choices.

What now of the ideal of disinterested (that is, non-moral) science, the science which has no ax to grind, does not care where the chips fall, is motivated solely by a curious drive to know, one which will not decide whether what it learns is for better or worse so far as human or any other fate is concerned? Do I claim that this view of the scientist's work is illusory, or worse still, immoral? I do not. What I suggest is that this is not a description of what science does, though it may in fact be an accurate account of some scientists' mood, and it may well direct efforts to one rather than to another sector in the domain of science. But that the mood of disinterested pursuit of truth can safely guide the whole scientific enterprise today, or that indeed it has ever done so even in the most romantic episodes in the science of the nineteenth century, seems to me to be wholly untenable. Indeed, as I have suggested above, the disinterested pursuit of the truth in science is a specialist attitude and in the case of the biologist today a dangerously over-specialized one.

This concludes my case note on directed biological evolution in human beings. I offered it as a dramatic instance of the role which moral creativity may play in science. I might have chosen the role of nuclear energy in human affairs as my example. Or the sciences centered around the waging of war. Or space exploration. Or the exploitation of the wealth of the oceans. In all of them, I think, the urge to creativity sharpens the moral dilemmas which these disciplines give rise to. It remains for me to note that if morality is to enter inside the inner gates of science, its burly and at times most unwelcome partner, the law, is apt not to be far behind.

Moral Creativity and Law

Recall that in our previous lecture we demanded of our brethren, the scientists, nothing less than that they should become morally creative. Then, having set them on this path, we threatened to "put the law on them". Can this prospect be more than only slightly intriguing? It is one thing for all hands to agree on the urgent need for moral creativity; it is quite a different matter to move toward it. Especially if law is to tag right along.

Is there any meaning at all in a directive to cultivate moral creativity? Or is this anything more than saying, "Be good, but don't be dull"?

Let us test out in thought the implications of our injunction to the scientists. What would you say to a wide-scale, well financed research program to produce human beings by the method of vegetative reproduction, reinforced by factors chosen from the primates or even possibly from still lower order animals? Does this prospect please you? Or does it give you the chills? It is creative, surely, but is it moral? Now since this method is carried on in much thoroughly respectable work in agricultural science, we may say of it there that it is moral to be sure, but can it remain there and be truly creative? Creativity, we begin to perceive, forces us to take risks. Morality, it seems, forces us to minimize them. What is the nature of this dialectical process taking place between creativity and morality? Is creativity always dangerous, and does morality always play it safe?

We shall approach our problem indirectly. Let us pick up two other pieces in our jig-saw puzzle, leaving the pieces called "morality" and "creativity" aside for the moment. What can we do with the pieces called

"law" and "creativity"? For almost the entire length of the history of law the answer would have been "Nothing at all". Creativity in law is reserved for the Creator Himself. Until very recently, it was felt to be immoral to experiment with the notion of law, just as today many feel that the notion of experimenting or being creative with morals is itself an immoral exercise.

Law, it was felt, comes from on high. Its ordinances are commands of the gods. Its prescriptions are revealed on tablets of stone, high in the mountains, during a hurricane or tornado. Ensconced safely in religion, indeed even thought of as its very substance, law is as unchanging as the nature of divinity. A new legal dispensation can be authenticated only by a god. Mere mortals are charged with the responsibility of ascertaining the divine will and then implementing it. In our religious tradition, the Old Testament prescribes a very highly detailed and quite sophisticated system of laws to govern the chosen People. Our God is not so much creator of a universe as He is Lawmaker, and His first word is properly called the Book of the Laws. This tradition of the god as mainly lawmaker is age-old. Laws are taken to be the evidence of the god's concern for his people, that they should know how to please and propitiate him, and more important still, that they should know how to stave off the workings of powers more awful still than the god, lower and prior to him, and about which he may have superior knowledge to that of human beings, but to contain which he needs the help of mortals. Laws then are not only our knowledge of the will of our gods, but more importantly they are our safeguard against the powers of the netherworld. It is dangerous to temper with them. In the history of cultures, gods that are all-powerful seldom appear. Most are heroes who confront the

unassuable forces of destiny. And their hard won wisdom is condensed for us in the form of immemorial laws.

More sophisticated formulations repeat the theme. Justice rules the universe, said the Pre-Socratics; beneath the kaleidoscope of changing human enactment lies the universal idea of law, the law which nature itself obeys, the natural law. In the Scholastic tradition the orders of law are the eternal law, the natural law, the divine law and last and surely the very least, human law, a species of law subordinate to all the rest, which are expressions of the nature of God. All authority to make law comes from God. For humans to change basic law is simply unthinkable in the Christian tradition. "Et antiquum documentum novo cedat ritui." The old order yielded to the new with the coming of Christ. But since that happened, and it took God Himself to do it, fundamental change in law was thereafter not only sacrilegious; fortunately, it was also quite unnecessary.

The natural law, superordinate to every human enactment, gave ground very slowly to the computing notion that men make their own laws for their own purposes and that no change in law however fundamental is beyond man's competence.

At this point we must remind ourselves that the doctrine of man-made law also has had a steady if somewhat disreputable and underground existence since antiquity. The Greek Sophists had boldly declared that law is a convention; that law-makers legislate only to their own advantage; that law is a conspiracy of the weak against the strong.

It took many centuries for the idea that men make laws in their own interest to become respectable, if indeed it is so today. We remember still the shock of Machiavelli's cool analysis of the function of politics.

Yet not long after that the British Parliament was proclaiming the total unaccountability of the King in Parliament, namely, Parliament itself. And in accordance with ideas later to be embodied in the French Revolution, we English colonists announced the right of the People to determine their own law.

American analytical jurisprudence turned over to the judiciary, the only branch of government it trusted, the sovereign right to determine fundamental law. And the first effort to introduce specifically the doctrine that our Constitution is subordinate to the fundamental principles of natural law was repulsed. Everywhere in the Western world the doctrine of the unaccountability of sovereign people or sovereign nations grew; more recently, it was reinforced by the Marxian ethics and by Freudian psychoanalysis. Then the process received its first major setback in the World Wars, especially after the Nazis' use of the idea of sovereignty to justify its horrors.

Does all this mean that mankind has learned the lesson that all attempts at conscious remaking of fundamental law end in disaster? We would certainly betray complete ignorance of our own nature if we were to imagine any such thing. On the matter of taking his destiny in his hands, man is incorrigible, perhaps the only species of living being that cannot learn to let his fate alone.

Modern man has no intention whatever of leaving his fundamental laws to the gods. The English Revolution, the French Revolution, and our own all combined to force on the world a pattern of man-made law. Out of a combination of nineteenth century dialectical Hegelianism and scientific materialism came the Marxist call on mankind to begin to make its own history. These notions have dictated the form of political and legal

revolt throughout the entire earth. Even idealists speak of one law, man-made and self-imposed, for the whole world. In brief, law has gone over wholly to the doctrine of conscious creativity. Despite all the warnings of past history, in defiance of a long string of Tower of Babel disasters, we intend to make law as creatively as possible in accordance with our present needs as we see them.

It is very difficult for us to see how dangerous this program really is. Our religious leaders, instead of warning us of the perils of this ungodly hubris, actually spur us on. The churches have become an adjunct of social welfare. They plan to take thought on how best to intervene in the conduct of secular affairs. I conclude that in law the notion of creative effort consciously directed is more widely accepted, indeed much more generally approved, than it is even in science.

We come now to the question of the role of creativity in morals. Are we willing to accept the idea first that we do create our own morals, and second that if we do create them we should do the job creatively? This is a delicate matter, one that men have seriously considered only for a short century or less.

Morality is in the process of separating itself from religion. Humanism secularizes morality, making it go the way of science and law. I do not desire to coerce opinion here. Consider carefully whether you would be willing to say that morality has become completely humanist, wholly freed from the sovereign dominance of religion, no longer on the lap of the gods. When Nietzsche expressed astonishment that some of us could be found who had not yet heard the news that God is dead, he was not proclaiming the end of religion, but the emancipation of morality and incidentally of religion itself from their ancient moorings in established

tradition. Morality rather than religion was his major concern; more specifically, experimental morality. The time had come, announced this prophet, for mankind to experiment consciously with its morality - a program already well under way at the time in the sphere of law, government and science.

Dare experiment with our morality? Create a new morality? Are we ready to take human destiny into our own hands? I say this to you: We may not be ready, but we are doing it anyway. We are acting like self-creators and it behooves us to find out what we are doing; to give thought to what shape humanity should take; to design our moral experiments, with what help we can get from science, in a more conscious and more rational way than has been our practice in the past. The name I have given to this idea is moral creativity. So far, I have shown the stake which science has in this enterprise, using the new and revolutionary ferment in biology to point up the problem. It remains to consider what part law can and should play. What is the meaning of the notion Moral Creativity in Law?

We are fortunate not to have to rely on our own efforts to spell out at great length the relation of law to morality. This has been the subject of long centuries of intense philosophical speculation, beginning with the Greeks, and continued unabated even to the present moment. Law has been called everything from a minimum ethics to the highest expression of the Will of God; morality has been called everything from the mere name for customary ways of doing things to the Ideal of the Highest or Absolute Good.

We have little time for such dramatic contrasts. We have no need to add to the mountainous literature already dedicated to this pair. It will

suffice for our purposes to oversimplify our problem to the point of simple-mindedness. We will use the greatest philosopher of modern times for this purpose.

Immanuel Kant, after having studied the philosopher's stone for nearly sixty years, tapped once, like a diamond cutter, and science and morality fell neatly apart. The natural scientist, said Kant in the Critique of Pure Reason, is forever doomed to examine only the phenomena which assail his senses from the outer and inner worlds, and to provide the means by which humanity should most efficiently seek its ends. But as to what ends humanity should seek, science as science had nothing whatever to say. Its imperatives are all hypothetical; if one wants to do thus and so, then science may show him how to do it. Morality, the subject matter of the Critique of Practical Reason, discloses man as the supreme legislator making law for himself. This is his freedom. On what man ought to do, nature and hence science has nothing to say. Thus, science and morality complement each other, but each has its separate task. As I have indicated in the previous lecture, we are by no means sure that we can abide by the notion of separate roles for science and morality. It looks to us as though these two aspects of human behavior now must associate much more intimately than Kant thought.

Kant's hammer swung once more, this time to divide morality from law. Morality, said our philospher, binds the inner life of man only, his conscience. Law constrains only his outer life, his body and its manifold associations. Can we accept this hard and fast separation of the two domains of obligation? The ordinary person cannot, just as he cannot exempt science from moral responsibility, or morality from ignorance. Philosophers show us what the road we say we intend to take is like at

its bitter end. This is their great use. But of course we really do not intend to go down that road to the bitter end, and in practice very seldom do. So, we cannot live out lives without mixing our moralities and our laws. We accept much of the worldly wisdom that tells us morality has intimately to do with outer custom, not the conscience of man only, but his external social behavior as well; and we also feel at times that law does indeed constrain our inner life by calling to our conscience and demanding right subjective intentions and attitudes.

I repeat, our moralities and our laws are mixed up with each other, just as science and morality are. What effect does this have on our theme, namely, the relation of law to moral creativity? Something, I hope. Not every legal act is necessarily moral (I think it is, though I needn't press this point). But the whole legal enterprise cannot help making moral decisions, and in its moments of creativity, law is very close indeed to morality and stands to create something very dangerous, if in the moment of legal creativity the lawmaker is not also a conscious moral agent.

The converse is equally true. The creative moralist had better be lawmaker at the same time. For law is the name by which moral aims may be realized consistently with human freedom in action. Historically, morality's record in the matter of human freedom, like that of religion's, is woeful indeed. Law at the very least stands to make the burden of morality, of moral obligation, tolerable. At best it makes it sweet.

I do not feel that one can be assured that conscious moral creativity is justified simply because law is coming to recognize that creativity is expected of it. But is this true also for morality? Is it not perhaps better to allow the well-springs of morality to go unplumbed? To take

our morality as it comes, relying on the good old ways of immemorial custom or inspiration from on high? I am afraid that it is too late for us to remain within the comforting glow of either of these traditional sources of morality.

Immemorial custom has all but disintegrated as a source of moral strength. The eighteenth and nineteenth century moral relativists had no trouble showing us that every conceivable crime has had the sanction of some "immemorial custom" or other. Our historians go further and demonstrate that when it comes to immemorial custom the memory of man is very short indeed. And what about the inspiration of the gods? In this cool age, that ancient source of moral guidance has become the collective unconscious. We are told that the gods are inside ourselves. There appears to be no alternative to the hard task of accepting our moral destiny as our first moral necessity. We are being driven out of our moral Garden of Eden, and recapitulating our early religious history we are forced by our new found knowledge to become scientist and lawmaker.

Our morality, it seems, has always come to us from our own unconscious depths. Our reason for existence and our ultimate destiny have remained hidden from us. Man has always progressed by walking backwards, trying to find out where he is going by seeing where he has been. Now we are turned around, facing squarely the path we are to take. The prospect is grim. Surely, if we had a choice, we would turn our backs on it, facing once more the familiar scenes of the past. But we cannot turn around. This choice is not given to us. So, dropping the metaphor, we may say at once that since our destiny is no longer to be given to us, we must make it ourselves.

Our perception is growing clearer that our moralities all along come

from ourselves. This is surely the contemporary significance of the religious conviction that God made us free. Only now we add to that awful freedom a new dimension: We are now free to make our morality, and being free to do so, we are morally compelled to accept our new found freedom. We are learning the meaning of freedom in an example almost too hard for us to bear. To be free is to be necessitated. If it is any comfort to us we now know in our very bones what Spinoza meant when he called freedom the recognition of necessity. Thus the ancient clash between the doctrines of freedom of the will and moral determinism come to rest momentarily in us. We are the living embodiment of this historic moral paradox.

What must we do to be saved? I have only the chill comfort of philosophy to offer you. We must use what science we have to find out what manner of creature we are. Nothing less than the whole range of science from humanistic inquiry to controlled experimental investigation with all its attendant risks will suffice. We must use all the safeguards law provides as we undertake to spell out what the present necessity to be morally free means to us.

Let us leave those abstract speculations for the moment and attend once more the current crisis in biology. Surely we cannot tell our scientists to stop before the dreadful prospect of creating new forms of life, even new forms of human life. Nor can we expect the scientist to be his own moralist as well, however deep may be our conviction that the experiments he is engaged in are moral ones. Perhaps we can suggest to him that before he goes much further with the experimental design for planned human evolution he stop to realize that his design fails to take sufficiently into account certain other parameters whose absence may be fatal to his enterprise. These parameters are nothing other than morality and law.

We know distressingly little about planned experimentation in law; we know nothing at all about planned experiment in morality.

I am suggesting that experimentation in the direction in which molecular biology is now taking us is experimentation, however poorly designed, in morality and in law. I am further suggesting that all creative scientific experimentation will take on this form increasingly, as mankind faces the necessity of doing something about the fact that science, morality and law are now dangerously out of phase.

What form should we give to the over-all model which brings together scientist and lawyer-moralist, assuming that it is our conviction that the biologists cannot, or rather since it is obvious that they can, let us say rather that they should not go it alone in the experiment of what has been called the "Control of Human Heredity and Evolution". (Sonneborn, T. M., 1965)

The biologist is up to his ears in the problem and has formulated it for himself, alluding indirectly to it in moral terms, but with only vague overtones of legal implications. What can the lawyer do to help the scientist over the moral and legal hurdles which will gain in visibility as plans for modification of human evolution become explicit? If the history of law is any guide at all, we could begin by warning the biologist that all hell might break loose at any moment when plans for controlled human evolution become highly visible. Our history also tells us that nothing at all may happen. Many of the most profound modifications of the course of human development have taken place gradually and with no fuss. Perhaps the planned evolutionist's safest course is to keep right on with his experimental work, following it wherever it leads, telling no one outside the ranks much of what is going on, trusting to luck, and taking steps

to insure that innovations are introduced by the medical profession, which right now is in high esteem and is permitted a wide range of experimentation under the guise of the practice of the healing arts and the saving of life. We have many examples of massive alterations in the human constitution created in the main by the biological sciences and introduced in medical practice with the full acceptance of public opinion. I instance the wide-spread eradication of infectious diseases, without any effort to count the human costs, present or future, of such programs. More recently, organ transplantation seems to be enjoying the same popular acceptance. There is no knowing whether planned evolution will make out as well. It may. But then again it may not. Either way there are risks. So I must make a choice, and in doing so I choose to speak of consciously planned programs and the risks they are apt to entail. I make this choice partly as a matter of temperament and partly because I can find a role for legal research workers in consciously planned experimentation, but not in the other way, the refusal to plan. There, lawyers come in, if at all, only to pick up the pieces after an explosion.

I go on now to the question of consciously planned programs for controlled human evolution. How would the legal investigator fit in as an integral part of such a program? First, with a warning. One of our qualifications for helpfulness here is a bitter experience of our own. In the very extensive series of studies on the jury system, some of our colleagues ran into a most unfortunate disappointment. Their research model for tapping information from live juries had been very carefully worked out. It received the consent of presiding judges, counsel on both sides and the parties concerned. After six months of very successful operation, the hell I mentioned broke loose. It ended with a federal statute

forbidding such experimentation under penalty of four years in the penitentiary.

I do not know whether this sad end could have been avoided, but I do know that since then the directors of the jury project are most circumspect. I know also that the study of the behavior of juries is restricted to simulation. Live behavior is beyond reach of experimentation.

Techniques exist for ascertaining the state of public opinion likely to give rise to legal regulation. Although we are distressingly weak in the scientific determination of such matters, we have a vast empirical experience in law-ways. This is no guarantee, nor can there be any. Even if nothing more pretentious than legal consultation before risky action is decided upon is held, at least this elementary precaution should be taken.

Dire warnings and prophylactic legal precautions aside, is it possible that legal research might actively participate in the building of the scientist's research model? Can and should law be an integral part of the plan? I have written much on the subject of legal experimentation, particularly on the part law should play in the development of an experimental social science. Very briefly put, the role of law is to allow the social scientist to control his investigations of human subjects consistently with human freedom and public morality.

Dissatisfaction with the methods of behavioral science is growing. Behavioral scientists are being charged with invasions of the privacy of the individual and with giving rise to a vast bureaucracy for testing his right to the privileges of holding a job and getting an education.

Again, I do not know whether this clamor might sooner or later be directed against biological experiments as they approach the human range.

But one can certainly not be sure that they won't, since the sentiments activating protest are broad enough to cover the proposals we are now considering. These further reflections are still within the range of exhortation and warning. They are not directly to our point. What is to our point is the question of how law and morality could fit into the scientific experimental regime.

Scientists are not yet accustomed to include in their models of planned research parameters expressing the value system they propose to enhance. They are largely unaware, it seems to me, of the growing movement to subject scientific experimentation to the test of the cultural values the experiment will promote measured over against the cost to these values likely to be exacted by the experiment itself and its outcome if successful. Heretofore this matter has been left to the conscience or rather to the diffuse conscientiousness of the profession or even to the individual investigator. Now in a large class of experiments dealing with human subjects, moral and legal interests must be taken account of. At present, the legal and to a large extent the moral protection of human subjects of experiments, whether biological, medical, psychological or sociological are thought to be satisfied if they meet the requirements of the legal doctrine of consent. But we know how inadequate that concept is, developed in the area of tort and crime to cover defenses against claims for relatively gross invasions of interests in person and property.

Far beyond the scope of the legal doctrine of consent are the general protests against much scientific experimentation as contrary to the teaching of morality, as affronts to human dignity and as violations of elementary ideas of decency and taste. I mention only "biological warfare" which to many people is a plain abomination. The fiasco of Project Camelot

shows us that the rest of the world does not share our tolerance for prying, probing, deception and downright lying that takes place in certain of the activities of the behavioral sciences. The time may not be far off when behavioral science will find it necessary to pay heed to enlightened public opinion which often feels that certain behavioral investigations ought not to be undertaken at all.

Biological and medical research may face similar constraints. Protests and even legal restriction against inhumane methods of animal experimentation are increasing. It would be unwise for scientific investigators to treat this growing moral sensitivity as a mere nuisance to be circumvented or waited out. I suggest on the contrary that the moral and legal values underlying such sentiment be incorporated in the experimental design. This prospect is so far-ranging that it can hardly be regarded as anything other than an exercise of imagination in the sphere of the philosophy of science. But science has become such a vast activity today that it should not be at all surprised to find itself deep in politics and public morality. After these, law is inevitable.

My last injunction is addressed not to scientists but to those of us whose major concern is law and morality. Must we not resolutely face the necessity of discovering what it means to experiment consciously with law and with morality? Is it not our primary obligation to so adjust our enterprises that they may be put more nearly in phase with the conduct of science? Should we not now be busily creating models for scientific investigation of the nature of human nature, models wherein the scientific, the moral and the legal disciplines all have their part? We might begin with the portentous design for human evolution. And as we proceed with our first crude model of this or some other fateful scientific proposal

(the channeling of mankind's warlike energies to peaceful pursuits might be another) will the realization not inevitably grow on us that of course our science must be morally creative, and equally of course law must be as creative as either of them? In this grand philosophical vision of science, morality and law as partners, it will no longer be necessary to ask the embarrassing question, How shall we be creative? Any advance toward this vision would be creativity itself.